

WHAT IS CLAIMED IS:

1. A method for providing switching between power sources for a load, said method comprising the steps of:

for each phase of each source, making each source available for connecting to the load via a stationary contact;

5 for each phase, allowing pivoting of a movable contact assembly between the stationary contacts; and

mounting the movable contact assembly for each phase on a single shaft.

10 2. A method for assembling a switch for transferring between power sources for a load, said method comprising the steps of:

for each power phase, nesting a load bus assembly, a stationary contact for each source, an arc chute assembly and a movable contact assembly in to a phase plate;

nesting the phase plates adjacent to one another; and

15 mounting the phase plates and movable contact assemblies onto a single shaft.

3. A transfer switch for switching between power sources for a load, said transfer switch comprising:

20 a plurality of phase plates, each said phase plate comprising a centerline about which said phase plate is configured symmetrically;

a plurality of stationary contact pads associated with each said phase plate, each said stationary contact pad associated with a power source;

a movable contact assembly associated with each said phase plate; and

25 a shaft connecting said phase plates and upon which each said movable contact assembly is mounted for movement between said stationary contact pads associated with each said phase plate.

4. A transfer switch in accordance with Claim 1 wherein said movable contact assembly further comprises a movable finger and a pivot, said finger mounted on said pivot.

5. A transfer switch in accordance with Claim 2 wherein said contact assembly further comprises two movable contact pads mounted on said finger.

6. A transfer switch in accordance with Claim 3 wherein one of said movable contact pads comprises silver and tungsten.

7. A transfer switch in accordance with Claim 3a wherein one of said movable contact pads further comprises forty percent silver and sixty percent tungsten.

8. A transfer switch in accordance with Claim 3 wherein one of said movable contact pads comprises a curved surface.

9. A transfer switch in accordance with Claim 3 wherein one of said movable contact pads comprises a waffle-patterned brazed surface.

10. A transfer switch in accordance with Claim 3d wherein one of said movable contact pads comprises a surface brazed using a BcuP5 alloy.

11. A transfer switch in accordance with Claim 1 wherein one of said stationary contact pads comprises silver, tungsten and tungsten carbide.

12. A transfer switch in accordance with Claim 3f wherein one of said stationary contact pads further comprises 50 percent silver, 37.5 percent tungsten, and 12.5 percent tungsten carbide.

13. A transfer switch in accordance with Claim 1 wherein one of said stationary contact pads comprises a waffle-patterned brazed surface.

14. A transfer switch in accordance with Claim 3h wherein one of said stationary contact pads comprises a surface brazed using a BcuP5 alloy.

15. A transfer switch in accordance with Claim 3 wherein said movable finger configured to bring one of said movable contact pads into contact with one of said stationary contact pads using a sweeping action.

16. A transfer switch in accordance with Claim 3 wherein said movable finger is configured to remove one of said movable contact pads from contact with one of said stationary contact pads using a sweeping action.

5 17. A transfer switch in accordance with Claim 3 wherein said stationary contact pads are associated with phase currents and a neutral current, and wherein each of said stationary contact pads further comprises a thickness, said thickness of said stationary contact pad associated with the neutral current greater than said thicknesses of said stationary contact pads associated with the phase currents.

10 18. A transfer switch in accordance with Claim 2 wherein said movable contact assembly further comprises a braid assembly and a braid nesting pocket formed by said pivot, said braid assembly movably attached to said finger in said braid nesting pocket.

15 19. A transfer switch in accordance with Claim 6a wherein said braid assembly comprises a single-piece braid and mounting ports configured to prevent rotation of said braid assembly.

20 20. A transfer switch in accordance with Claim 2 further comprising a mechanical drive assembly configured to allow rotation of said movable finger about said pivot.

25 21. A transfer switch in accordance with Claim 6c wherein said mechanical drive assembly further comprises a solenoid assembly, a fork assembly and a mass driver assembly, said solenoid assembly linked to said mass driver assembly, said mass driver assembly movably connected to said fork assembly.

30 22. A transfer switch in accordance with Claim 6d wherein said mass driver assembly and said fork assembly each comprise a plurality of stopping surfaces, said stopping surfaces configured to cooperate in controlling motion of said mechanical drive assembly.

23. A transfer switch in accordance with Claim 6e wherein said fork assembly comprises an internal geometry allowing for a series of transition points based on movement of movable contacts between stationary contacts.

30 24. A transfer switch in accordance with Claim 6e wherein said fork assembly comprises a centerline about which said fork assembly is symmetrical.

25. A transfer switch in accordance with Claim (6d) wherein said mass driver assembly further comprises a manual handle insertion point and positional indicators.

26. A transfer switch in accordance with Claim 1 further configured to:

make a neutral current connection before making a phase current connection; and

break a neutral current connection after breaking a phase current connection.

27. A transfer switch in accordance with Claim 1 wherein said movable contact assembly is symmetrical about a centerline.

28. A transfer switch in accordance with Claim 1 wherein said movable contact assembly further comprises a carrier, a plurality of contact springs and spring nesting pockets, said contact springs nested in said spring nesting pockets and enclosed in said carrier.

29. A transfer switch in accordance with Claim (7b) wherein said movable contact assembly further comprises a carrier cover, said cover further comprising embedded alignment features.

30. A transfer switch in accordance with Claim (7b) wherein said carrier comprises an acceptance hole for said shaft.

31. A transfer switch in accordance with Claim (7d) wherein said acceptance hole is hexagonal.

32. A transfer switch in accordance with Claim (7b) wherein said carrier comprises integral baffling.

33. A transfer switch in accordance with Claim (7b) wherein said carrier and said cover comprise braid shields.

34. A transfer switch in accordance with Claim 1 wherein said shaft is hexagonal.

35. A transfer switch in accordance with Claim 1 further comprising a plurality of arc chute assemblies, each said arc chute assembly comprising a centerline about which said arc chute assembly is symmetrically configured, each said phase plate associated with one of said arc chute assemblies.

5 36. A transfer switch in accordance with Claim 8 wherein one of said arc chute assemblies further comprises two identical arc chute plates reversible for assembly.

37. A transfer switch in accordance with Claim 9 wherein said arc chute plates comprise molded thermoset plastic.

10 38. A transfer switch in accordance with Claim 8 wherein one of said arc chute assemblies further comprises a plurality of deion plates locked in a plurality of embedded locking locations.

39. A transfer switch in accordance with Claim 8 wherein one of said arc chute assemblies further comprises a plurality of venting orifices.

15 40. A transfer switch in accordance with Claim 1 wherein one of said phase plates further comprises a plurality of integral reinforcing ribs, built-in anti-rotation pads, integral cable stops, baffle guides, and compartmentalized areas for mating parts of said transfer switch.

20 41. A transfer switch in accordance with Claim 1 wherein said phase plates are further configured to allow nesting of parts and modular configuration of said switch.

42. A transfer switch in accordance with Claim 1 further comprising a load bus, said load bus comprising a single lug attachment point and a plurality of integral projections configured to prevent lug rotation.

25 43. A transfer switch in accordance with Claim 1 further comprising a line bus subassembly fabricated as a single piece and further comprising a single lug attachment point, a mechanical lug anti-rotation surface, and an arc runner anti-rotation surface.

30 44. A transfer switch in accordance with Claim 1 further configured as a two-pole switch.

45. A transfer switch in accordance with Claim 1 further configured as a three-pole switch.

46. A transfer switch in accordance with Claim 1 further configured as a four-pole switch.

5 47. A transfer switch in accordance with Claim 1 further comprising a plurality of limit switches and a cam configured to operate said limit switches, said cam mounted on said shaft.